



Journal of Applied Communications

Volume 105 | Issue 2

Article 6

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Recommended Citation

Dobbins, Catherine E.; Masambuka-Kanchewa, Fallys; and Lamm, Alexa J. (2021) "A Systematic Literature Review of the Intersection between Social Media and Cultural Identity: Implications for Agricultural and Environmental Communication," *Journal of Applied Communications*: Vol. 105: Iss. 2. <https://doi.org/10.4148/1051-0834.2372>

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A Systematic Literature Review of the Intersection between Social Media and Cultural Identity: Implications for Agricultural and Environmental Communication

Abstract

Social media has radically changed human communication patterns, impacting how people perceive scientific information. This study sought to explore how cultural identity impacts the use of, and engagement with, social media content related to agriculture and the environment. Informed by Social Representation Theory, a systematic qualitative literature review was conducted to investigate how cultural identity impacted engagement with social media sources of agricultural and environmental information. Several studies indicated differences in social media engagement between people from different cultures. However, different definitions and perspectives on cultural identity emerged with some researchers describing culture in relation to nationality and others in terms of beliefs. In cases where culture was described in relation to beliefs, it was observed that individuals are more likely to defend beliefs central to their sense of identity when contradicted by new information. Despite the availability of several studies integrating cultural identity, environment, and social media, a gap was observed within research explicating directly the intersection between science communication, cultural identity, and social media. Additionally, differences emerged between research on social media and cultural identity within agricultural communication as compared with more general environmental communication. Due to the changing dynamics in agricultural and environmental communication proliferated through social media, scholars should place greater emphasis on research aimed at investigating the impact of social identity, social media, interaction and engagement with online communication messages. Future research should investigate how a holistic social identity impacts individuals' perceptions of science communication messages, as no clear answer emerged within the current literature.

Keywords

cultural identity, science communication, social media, social identity, social representations theory

Introduction

Science communication for agricultural and environmental issues has primarily focused on disseminating scientific projections and factual information to galvanize a public response (Munshi et al., 2020). The dissemination approach is limited, as it fails to account for the differences in social and cultural contexts that exist between and among social groups. Competing voices fill the public sphere of environmental discourse, which influences public understandings of and relationships with the environment (Cox, 2013). Social groups influence individuals' experiences and responses to agricultural and environmental issues, as exemplified by the differences between various social groups and their responses to the negative impacts of climate change (Badullovich et al., 2020; Munshi et al., 2020). The proliferation of new media exposes the public to various sources of information that can influence perceptions of and connection to the agriculture and the environment (Wunderlich & Gatto, 2015). This is exacerbated by the presence of digital communication platforms and social media which provide greater access to science and environmental information (Jones, 2010). However, not all the information available on social media is accurate and from credible sources.

Digital online media, specifically social media, have changed both the tools available for agricultural and environmental communication practitioners and the methods by which consumers receive information, both credible and non-credible, related to agricultural and environmental information (Irani & Doerfert, 2013). As such, for agricultural and environmental communication interventions to be effective they must recognize the differences that exist among people due to cultural contexts and social identity as it relates to social media use (Falkheimer & Heide, 2014). Previous literature has shown cultural orientation influences preferences for online information (Arpaci & Baloglu, 2016; Song et al., 2016; Valaei et al., 2017). As a result of the changing dynamics in communication proliferated through social media, there is a need to place greater emphasis on culture and identity in agricultural and environmental science communication research and practice (Munshi et al., 2020).

The current study operationalizes social media as digital content communities, such as YouTube, and social networking sites, such as Facebook, which allow for the creation of user-generated content, user collaboration across platforms, and the sharing of information within and beyond the platform (Kaplan & Haenlein, 2010). These platforms, often used in combination and/or simultaneously, have become ubiquitous in individuals' lives and often act as primary sources of information and news (Kent & Li, 2020). Social media networks have radically changed human communication and interaction patterns, which has implications on how people communicate and connect, not just with one another, but with scientific information (Cheung & Lee, 2010). Interactions within social media have become networked, cultural, relationship-oriented, and dialogical (Kent & Li, 2020). People engage with social media outlets because it offers a way for them to feel as if they are being heard and that their thoughts and feelings are respected (Brogan, 2010; Graybill-Leonard et al., 2011). Not all social groups share the same values, standards, ideologies, or experiences; however, all do construct representations closely based on these concepts (Rateau et al., 2011).

The concept of identity relates to the social process of perception and differentiation by individuals or groups with which an individual feels similar or different (Sherry, 2008). Individuals classify themselves and others into social categories which have significant effects on the psychological and sociological aspects of group behavior (Nkomo, 2010). Identity is a fluid, rather than static, construct, and people may identify with multiple identities coalesced around

characteristics such as gender, sexuality, race, ethnicity, age, and nationality (Sherry, 2008). Social identities and culture affect social cognition, thereby influencing the choices people make about the clothes they wear, the food they eat, their personal values, and those with whom they associate (Padilla & Perez, 2003). Identity also impacts the creation of opinions, as attitudes are rarely formed in isolation from a community, thereby contributing to an othering of individuals who are perceived as different (Veldman, 2019). Within the context of agricultural and environmental science communication, understanding the role of identity is critical, especially how accepting or rejecting concepts, such as climate change, can allow individuals to affirm their identity within specific groups (Veldman, 2019).

Culture, closely related to identity, also plays a role in the consumption and understanding of information. In this context, culture refers to “the diverse repertoires of practices, values, and beliefs that individuals use to engage and make sense of the world to accomplish purposes valued by them and the communities in which they participate” (Medin & Bang, 2014, p. 13622). Changing demographics and social values, in conjunction with new communication technologies, have contributed to a shift in public perception toward agriculture and the environment (Irani & Doerfort, 2013). According to Bubela et al. (2010), public trust in and perception of media and communication messages vary based on an individual’s social identity and values.

Culture and identity can be performed on social media (Hogan, 2010), leading to a need to examine how identity is constructed and reproduced in an online environment. According to Singh (2010), within social media, “interpersonal connectivity is formed through social networking sites, [leading] to a complete shift in social connection patterns of people” (p. 88). As social media evolves, participants in this new media contribute to the content shared, shifting from appointment-based viewing to engagement-based viewing of media topics (Gorham, 2016). This shift has changed how cultures are affected by symbolic media (Gorham, 2016), and, in turn, how cultures may be constitutively interacting with the creation of new media (Brock, 2012).

The effectiveness of agricultural and environmental communication messages depends on specific cultural characteristics and values that influence a particular consumer group (Medin & Bang, 2014). However, the role of culture in agricultural and environmental communications research related to social media engagement is limited despite the availability of research on the impact of social media in the creation of negative perceptions about agriculture and the environment (Gibson et al., 2019; Graybill-Leonard et al., 2011; Pritchett et al., 2012; Wagler & Cannon, 2015; Wickstrom & Specht, 2016). Understanding the impact of cultural identity on social media engagement is an important step in unveiling factors that contribute to an increased reliance on social media as a source of agricultural and environmental information. Social media is now a primary source for information-seeking behavior (Osatuyi, 2013) and thus has a vital role to play in the proliferation of scientific information and misinformation. New insights garnered would allow agricultural and environmental communicators an opportunity to consider cultural orientations when developing effective strategies (Medin & Bang, 2014), especially as cultural orientation and identity may inhibit the uptake of scientific information messages (Merzdorf et al., 2019).

Theoretical Framework

Moscovici’s (1988) Social Representation Theory (SRT) served as the theoretical framework for the current study. Social representations (SRs) are “systems of opinions, knowledge, and beliefs particular to a culture, a social category, or a group with regard to objects in the social environment” (Rateau et al., 2011, p. 478). SRs play a significant role in establishing social

realities around the environment and other settings for members of specific social groups (Howarth, 2006; Jaspal et al., 2014) and facilitate communication processes within social groups by providing identities and norms crucial for an individual's understanding of social reality (Moscovici, 1973). These processes contribute towards the construction of social reality and representations of a group that gives members both their identity through social membership and a marker by which to distinguish individuals as *other*, someone who does not share the same representations (Rateau et al., 2011). Thus, individuals who have different values and beliefs defend their own attitudes and suppress others, so their representations are used to describe what is deemed as reality (Howarth, 2006). Therefore, the perception of social reality varies between individuals based on their values, standards, ideologies, or experiences (Godelier, 1986).

SRT allows researchers to look at relationships between individuals, rather than at isolated individuals, as well as at the communication channels, settings, and contexts in which people interact (Elchereth et al., 2011). SRT also includes what relevant others think in a particular setting or about an issue, allowing for the observation of collective practices and encouraging the comparison of organized wholes (Elchereth et al., 2011). SRT gives insight into how social realities are created and recreated, a phenomenon increasingly relevant when studying social media communication.

SRT is useful for examining individual and group understandings of scientific issues (Jaspal et al., 2014). SRs are critical for social science approaches to science communication, especially approaches to environmental and agricultural science, that involve how the issue is represented and how people interpret, think, and feel about the issue (Jaspal et al., 2014). For agricultural and environmental science specifically, SRs underpin public policy related to agricultural subsidies, agritourism, food, and consumer behavior (Sutherland, 2020). Additionally, notions of the anthropogenic causation of climate change requires individuals to rethink their behavior and engage in mitigation techniques, which can affect their daily activities (Jaspal et al., 2014). The behavioral changes potentially required and the impact these issues may have on individuals' lives can influence the degree to which individuals accept the message related by agricultural and environmental communicators. When behavioral modifications are required, as with climate change, or if intimacy with which individuals are connected with an issue is high, then these SRs become personal and integrated within perceived intergroup power struggles (Jaspal et al., 2014).

The scientific community often creates representations of scientific knowledge for the public, as scientific discoveries that become relevant parts of the public discourse become social representations of science (Lievrouw, 1990). Considerations of the role of identity processes allows for the prediction of the acceptance and salience of SRs of different environmental concepts among individuals (Jaspal et al., 2014). Indeed, when individuals are presented with contradicting information, they are more likely to defend beliefs that reflect their sense of identity rather than comply with new information (Dunwoody, 2007).

SRT is a useful theory for constructing and distributing scientific communication messages (Jaspal et al., 2014). While SRT is widely used in science communication literature, few, if any, studies integrate the concepts from SRT with social media research. Social media makes access to and the exchange of information convenient for the public (Rampersand & Althiyabi, 2019). Within social media networks, people communicate with others "in a global village" – meaning that social media users are exposed to, and can communicate with, people across cultures and nations (Wang et al., 2016, p. 40). The question remains, how do individuals construct and understand their cultural identity within and among various social groups, and how does this

cultural identity affect their engagement with science communication messages on social media? Thus, the role of social media in the evolution of SRs should be an area of research investigation within science communication as the public continually increases its reliance on digital and social media. Viewing current literature through the lens of SRT provided a contextualized understanding of how SRs influence in-group and out-group behavior, acceptance of specific messages, and the effect of beliefs, values, and other social tenants on individuals' interpretations of and interactions with science communication messages.

Purpose and Research Questions

The purpose of this study was to explore how cultural identity impacts the use of and engagement with agricultural and environmental social media content. The following research questions guided the study: a) How do social media users identify themselves culturally while engaging on social media?, b) How do social media users' cultural identities impact their choice of who to follow or interact with on social media?, and c) How do social media users' cultural identities impact their engagement with social media platforms when seeking agricultural and environmental information?

Methods

In order to answer the research questions, a qualitative systematic literature review was conducted (Borenstein et al., 2009; Gough et al., 2012). A systematic literature review is "a systematic, explicit, comprehensive, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars, and practitioners" (Fink, 2007, p. 17). It assists in "synthesizing results by constructing a thematic story to fit the literature base" (Scherer et al., 2019, p. 32).

Search Strategy and Data Collection

An "eight step guide to conducting a systematic literature review" (Okoli & Schabram, 2010, p. 6) was used to review journal articles published in English between 2009 and 2019. We selected the year 2009 as a benchmark as it was the year when Facebook ranked as one of the most used social media networks in the world and social media was used globally (Edosomwan et al., 2011). Two databases (Google Scholar and Web of Science) along with two scientific journals (*Journal of Applied Communications* and *Agriculture and Human Values*) were selected as the sources of the most current research exploring social media use in agricultural and environmental communications, as well as to situate the research study within the journal trends from 2009-2019. Google Scholar and Web of Science were used to identify articles focused on communication and social media use in general as well as within environmental communication. Furthermore, the *Journal of Applied Communications* was also chosen as it is the primary journal for publication of agricultural communication related articles, a primary focus of the study allowing for comparisons between agricultural and environmental communications scholarship and more general communications scholarship.

Following Okoli & Schabram's (2010) guidelines, we started by defining the purpose of the literature review, determining the protocol, and familiarizing ourselves with the protocol which served as a guide for selecting articles that were to be reviewed. Once the protocol was developed, we searched the literature and systematically reviewed titles and abstracts of articles to determine

if they contained text relating to the following concepts addressing the research questions: a) social media; b) cultural identity; and c) cross-cultural communication strategies within agriculture and the environment. We searched for articles in the databases using six search terms: *social media and cultural identity*, *social media and culture*, *social media and identity*, *cultural identity and social media engagement*, *impact of social media on consumer perceptions of agriculture*, and *impact of social media on consumer perceptions*. Table 1 contains a detailed breakdown of the data collection sources included in the systematic review.

As part of synthesizing the studies, we conducted qualitative content analysis for each article. Specifically, we followed an inductive category development procedure (Mayring, 2004). Content analysis began with inductive category development, in which codes were developed related to the research questions in terms of the material analyzed (Mayring, 2004). This was a reductive process to formulate codes from the material according to appropriate levels of abstraction. Categories were revised through interrater reliability.

Emergent codes were developed from 71 peer-reviewed articles relating to the intersection of culture and social media engagement according to the texts analyzed. Interrater reliability was assessed using four articles. Code-specific results from each article ranged from 50% to 75%, totaling 70.59% agreement among coded segments. Cohen's kappa for each of the four articles equaled $\kappa = 0.86$ (Liu et al., 2014), 0.68 (Rutsaert et al., 2013), 0.68 (Khan et al., 2016), and 0.70 (Merzdorf et al., 2019). These values were deemed adequate to move forward with individual coding (McHugh, 2012). The primary researchers coded the remaining articles separately through MAXQDA 18. After independent coding occurred, the primary researchers combined their MAXQDA projects into a meta-project to calculate the occurrences of each theme within the articles reviewed. Themes and subthemes were identified which informed the results of the study. The themes were generated based on the extent to which they addressed the research question regardless on the number of articles involved. As such, the word "some" was used in cases where an observation was made in less than five articles "few" for less than ten articles and most for more than 15 articles (Harding, 2013).

To ensure trustworthiness as described by Lincoln and Guba (1985), debriefing sessions occurred between the two primary researchers to ensure the credibility of coding techniques during analysis. We also established an audit trail for confirmability. The description of search criteria helped to establish dependability. Moreover, a third researcher reviewed the generated themes against the independent themes generated independently by the two primary researchers as part of peer debriefing (Spall, 1998). These additional techniques for trustworthiness helped ensure consistency between coders and transferability of the content analysis to other disciplines.

Table 1
Data Collection Sources

Search Engine	Number of Articles	Article Topics	Methods Used	Social Media Examined	Example Articles
Google Scholar	27	Political science; consumer behavior; social change; use of communication for improving public perceptions of agriculture; animal industry perceptions; organic food	Conceptual (7) Literature review (2) Mixed-method (2) Qualitative (6) Quantitative (10)	Facebook (2) LinkedIn (1) Pinterest (1) Twitter (1) WeChat (1)	Heinonen (2011) Kozinets et al. (2010) Kuttschreuter et al. (2014) Liu et al. (2014) McKendree et al. (2014) Pfeffer et al. (2014) Rutsaert et al. (2013)
Web of Science	11	Agricultural and “green” brands; internet use/social media presence; culture, demographics, and social media; climate change; agriculture and social media; trust and social media; social media and political discourse	Conceptual (1) Qualitative (1) Quantitative (9)	Facebook (2) Twitter (2)	Bedard & Tolmie (2018) de Oliveira et al. (2016) Chan-Olmsted & Wolter (2018) Fujita et al. (2019) Khan et al. (2016) Koivula et al. (2019) Pfeffer et al. (2014) van Eldik et al. (2019) Hoffman (2011) Sajjad et al. (2018)
<i>Journal of Applied Communications</i>	30	Social media; communicating to non-agricultural audiences; climate change;	Book review (1) Conceptual (1) Mixed-method (4) Qualitative (17) Quantitative (7)	Facebook (2) Twitter (2) YouTube (1)	Gikerson et al. (2016) Meyers et al. (2011) Specht & Buck (2019) Li & Su (2018) Merzdorf et al. (2019) Rohling et al. (2016)
<i>Journal of Agriculture and Human Values</i>	3	Social media and agricultural policy; identity relations in agri-food networks; social media and food policy	Qualitative (3)	Facebook (1) Twitter (2)	Rodack (2019) Rotz (2018) Small & Warn (2019)

Note. Not all articles examined a specific social media platform.

Subjectivity Statements

Reflexivity is critical to qualitative research, as it encourages researchers to be open about strengths and shortcomings and contextualizes the findings (Tracy, 2010). The primary author was pursuing a doctoral degree in Agricultural Leadership, Education, and Communication at the time of data collection. Her research interests include science communication and social identity. Prior to graduate school, she was not connected to agriculture or extension work, but rather grew up in more urban areas disconnected from traditional agriculture. Her theoretical perspective is emancipatory, defined as “research contain[ing] an action for reform that may change lives of participants [or] the institutions in which they live and work [...]” (Creswell, 2007, p. 21). This paradigm is often associated with critical and feminist theories and Freirean participatory action research (Lather, 2006).

The second author is a science communication specialist whose research focuses on the impact of communication on achieving sustainable agricultural development goals. As a Malawian native living and working in the United States, her personal experiences interacting and working with people from various cultural backgrounds contributes to her interest in investigating the impact of cultural identity, especially on social media, on acceptance of science information. As such, the author acknowledges that she may have had some assumptions which may have influenced interpretation of the research results. However, presence of the other two authors assisted in limiting the impact of such assumptions on the direction and interpretation of the research results.

The third author is an associate professor of science communication with over 20 years of experience communicating with and studying diverse audiences both in person and online using multiple mediums. She has a background in agriculture and brings years of experience studying public perceptions of a myriad of agricultural and environmental issues. Her theoretical lens is one of social constructivism, believing strongly in the social construction of meaning heavily influenced by cultural norms.

Results

RQ1: How do people identify themselves culturally while engaging on social media?

Three themes emerged from the content analysis related to the first research question: *identity cycle*, *social media identity*, and *political ideology*. It is important to recognize that variations in the definition of culture existed within the articles examined. Four studies used cultural identity to simply describe an individual’s country of origin (Khan et al., 2016; Kreuzbauer et al., 2014; Specht & Buck, 2019; Xiao et al., 2012) while others described cultural identity based on an individual’s values, beliefs, gender, or occupation. Most depicted culture through demographic variables, such as age, political affiliation, career, gender, or religion (Koivula et al., 2019; Liu et al., 2014; Merzdorf et al., 2019; Meyers et al., 2011; Rodack, 2019). Kim et al. (2011) indicated individuals from collectivist cultures searched for personal support and belongingness when engaging in social media and engaged with people from similar backgrounds and interests. Conversely, Mascheroni (2013) found that individuals from more individualistic cultures used social media more for social networking.

Identity Cycle

Manago (2013) found social media sites influenced identity development, especially among youth, and users negotiated interpersonal relatedness and personal autonomy throughout the exploration of and commitment in identity formation. As such, Brock (2012) reported how identity and culture mediated individuals' technology use and how using Twitter "can be understood as a discursive, public performance of Black identity" (p. 537). When exploring how individuals identified themselves on social media, scholars observed that individuals went through an *identity cycle* where they established identities in line with the expectations of various social media platforms. This identity cycle contained three stages: *identity formation*, *identity reinforcement*, and *identity performance*. Individuals often 1) formed a new identity online within their social media networks, 2) changed or continued this identity based on reactions from their social media community, and 3) continued performing this identity online after formation and reinforcement (Thomas et al., 2017). This identity cycle emerged from "the need to both affirm identity with a previous community and to create a new identity and loyalties to a new community" (Thomas et al., 2017, p.551). Dey (2016) explained that identities were not created in isolation from individuals' offline community influences; rather, they emerged through individuals' negotiation between their perceived and performed identity. The *identity cycle* theme, a theme derived from interpretations of several scholars' discussions of how identity emerges and is perceived/performed on social media sites, came primarily from research investigating how younger generations navigated social networking spaces during periods of transition (de Oliveira et al., 2016; Dey et al., 2016; Thomas et al., 2017). For those in the Millennial or Gen Z generations, social identity was a primary driver for social media use globally (de Oliveira et al., 2016). Young adults, especially during the years entering into university, used social media to curate and test a social identity (Thomas et al., 2017).

Social Media Identity

Social media identity emerged as a theme distinct from conceptualizations of social identity in its traditional form. Dey et al. (2018) reported social media allowed users to construct, or form, an online social identity, as well as test out and reinforce this new identity presented online. Scholars observed that individuals moved from having a social identity in the traditional sense and acquired a *social media identity*. This social media identity was an intersection between an individual's history, community, online engagement, and the new identity acquired through the *identity cycle* (*identity formation*, *identity reinforcement*, and *identity performance*) (Thomas et al., 2017). According to Dey et al. (2017), the identity cycle can produce a "dual cultural identity [which is] an outcome of individuals' constant and dialectic interaction with their ancestral and host cultures" (p. 496) in a process of acculturation into a new environment, in some cases an online social environment. Dey et al. (2017) also described how selfies (images of an individual taken themselves) are a mechanism for reifying "the extended self of an individual in the virtual world" (p. 497). Within the context of social online environments, identities must be flexible and fluctuate, as "a single identity is not longer feasible or desirable and the celebration of an established life is tainted" (Thomas et al., 2017, p. 551). Pan et al. (2017) echoed this, stating "social identity is inherently variable, fluid, context-dependent, and easier to deteriorate" (p. 92), furthering the need for flexible identity formation in the online environment.

Dey et al. (2017) and Ivcevic and Ambady (2012) reported differences in social media identities among individuals within diverse Facebook groups as a way of sharing their connection to a specific culture. These scholars observed that individuals portrayed different social media

identities depending on the social media group with which they were associated. According to Ivcevic and Ambady (2012), individuals interacted differently with specific Facebook posts that reflected their identity based on their associated Facebook group.

Political Ideology

The most used demographic variable in relation to culture and science communication was *political ideology* (Bennett, 2012; Bolton et al., 2013; Mascheroni, 2013; Rohling et al., 2016; Sajjad et al., 2018). Political ideology was a main predictor variable for belief in climate change in the United States (Hoffman, 2011; Merzdorf et al., 2019). Additionally, political ideology played an important role in the development and maintenance of online networked communities, especially related to agriculture and the environment (Rotz, 2018). Overall, political ideology was an influential factor in online community building in social media (Koivula et al., 2018).

RQ2: How do people's cultural identities affect their choice of individuals to follow or interact with on social media?

Two themes were identified related to the impact of cultural identity on choice of individuals to follow or interact with on social media: *community* and *motivations for use*.

Community

Social media allowed individuals to feel like a part of a *community*, despite the lack of a physical location (Stebner et al., 2017). For example, Opat et al. (2018) and Specht and Buck (2019) observed that people joined a Facebook group to voice their opinion or share their beliefs with like-minded individuals. Social media was described as having a role in “both creating and enhancing community relationships” (Thomas et al., 2017, p. 542). This was especially true for large-scale social issues, such as sustainability, environmentalism, and food movements (Kozinets et al., 2011; Rodack, 2019). The *community* theme built upon the *identity cycle* theme, as the identity cycle often occurred during a transition to a new community, whether in person or virtually (Thomas et al., 2017).

Community membership was frequently negotiated through identity conceptualizations, vacillating between online and offline community structures in an effort for individuals to construct their sense of social identity (Dey et al., 2017). Concepts such as belongingness, kinship, and like-mindedness were associated with community building on social media (Fujita et al., 2019; Rotz, 2018). The nature of social media allowed users to “participate in open-ended community building in near real-time” (Brock, 2012, p. 545). Social identity and community membership were often directly linked in many of the articles reviewed. Koivula et al. (2019) found those who strongly identified with their online social networks perceived themselves more as an online community member rather than having a distinct, personalized identity. Thomas et al. (2017) reported that identity negotiation emerged from the tensions between the need to affirm a social identity with previous communities and the need to create a new identity (and communicate loyalties) within a new community, as alluded to within the *identity cycle* and *social media identity* themes. Pan et al. (2017) found community membership through social media affected social identity and “the assessment of self-worth derivative of the membership in the community” (p. 79).

Within *community*, the subtheme *similar interests* emerged. According to Pan et al. (2017), community membership emphasized an individual's similarities with other members. Specht and Buck (2019) found similar beliefs and values among influencers and their followers on issues to do with food waste. Though they connected due to this shared interest, group members also shared similar values and career trajectories (Specht & Buck, 2019). Additionally, Facebook was cited as a mechanism to "unit[e] people from different walks of life and for people with particular opinions to not feel that they are alone" (Meyers et al., 2011, p. 8).

Motivations for Use

Several articles demonstrated that cultural differences influenced *motivations* for engaging with social media (de Oliveira et al., 2016; Pan et al., 2017). Pan et al. (2017) found that individuals use these sites in order "to engage in interpersonal interaction" (p. 93). Three articles expressed that maintaining and forming connections and relationships as well as social support with people was a main motivation for social media use (Heinonen, 2011; Kim et al., 2011; Rodack, 2019). Other scholars found people often used social media to maintain close social ties as well as to gather information about current events (Wagler & Cannon, 2015), retrieve information about a product (Heinonen, 2011), or seek entertainment (Barker, 2009). Barker (2009) described additional motivations for social media use, which included collective self-esteem and group identity. Within agriculture specifically, many used social media to promote the industry (Graybill-Leonard et al., 2011). This motivation was closely tied to their sense of identity, as they joined social media groups to advocate for the cause "because it is something that has been instilled in them their entire lives" (Graybill-Leonard et al., 2011, p. 6) and to "take part in a movement that supports agriculture [for] the simple reason of loving agriculture" (Meyers et al., 2011, p. 7).

RQ3: How do social media users' cultural identities impact their engagement with social media platforms when seeking agricultural and environmental information?

Two themes were identified relating to the third research question: *message acceptance*, *diverse viewpoints*.

Message Acceptance

White et al. (2014) found differences existed in content posted on social media depending on cultural identification or demographic classification, specifically relating to agricultural information. Demographic variables, such as political party affiliation, religion, family history, career, and geographic location influenced public perception and acceptance of scientific messages, especially those related to climate change and agriculture (Li & Su, 2018; Merzdorf et al., 2019). Gikerson et al. (2016) reported how these identity factors influenced public perception of the trustworthiness of a specific communication message or strategies related to their lived experiences and values. Merzdorf et al. (2019) highlighted that when scientific information and messaging contradicted an individuals' beliefs or values learned through an identity group, individuals often conformed to their group's belief rather than accept the message, engaging in what is known as "identity-protective cognition" (p. 5). This finding related to the *community* theme, as Hoffman (2011) found individuals were more likely to consider scientific evidence when it was accepted or presented by a member of their cultural community, especially related to climate change. One of the strongest ties Hoffman (2011) found that affected climate change message

acceptance was religion. Hoffman (2011) urged that in order to understand the climate change debate, we “must attend to the deeper cultural logics that are employed by opposing sides of the issue” (p. 20). Most research conducted around agricultural topics indicated differences existed in message acceptance depending on how people identified themselves in relation to agriculture (Rotz, 2018). This was true in cases where negative messages about agriculture were shared, which contributed to a deepening “antagonism between farmers and consumers” (Rotz, 2018, p. 449). Gikerson et al. (2016) also found an “us versus them” (p. 114) mentality. Most people who identified as farmers or agriculturalists were reported to be critical about messages that portrayed agriculture negatively (Gikerson et al., 2016).

Diverse Viewpoints

White et al. (2014) found people mostly interacted with *diverse viewpoints* on social media in negative ways. However, differences in reactions were observed by several scholars based on an individual’s identity (Merzdorf et al., 2019; Pan et al., 2017). For example, when agricultural topics were analyzed, Gikerson et al. (2016) and Meyers et al. (2011) observed that individuals who were involved in agriculture directly were defensive to social media messages that portrayed agriculture negatively. As such, scholars reported that individuals who described themselves as farmers explained certain issues in an attempt to improve understanding of agricultural issues among people without an agricultural background (Stebner et al., 2015; White et al., 2014). Furthermore, Loizzo et al. (2019) found agricultural and environmental scientists faced challenges when navigating heated discussions on social media, specifically Twitter, and tended to shy away from such discussions on social media. Conversely, Meyers et al. (2011) found some agricultural Facebook administrators felt that the platform allowed them to “connect with people across the country” (p. 6) with whom they would have never otherwise interacted. Singh (2010) highlighted how “the positive dimensions of new media teach the global citizenry to understand other cultures, respect and adopt food from them and assimilate that into their own cultures” (p. 88), with the positive outcome of maintaining cultural diversity.

Discussion

The systematic literature review revealed that when using social media, individuals identify themselves based on the culture reinforced by the social media platforms in which they participate. Individuals can have multiple social media identities based on the requirements for being a member of a social media group (Thomas et al., 2017). Individuals also had different motivations for engaging with various social media platforms. Data from the literature review supported the notion that individuals would defend the beliefs central to their sense of identity when contradicted by new information (Dunwoody, 2007; Jaspal et al., 2014).

Identification with a specific political belief and connection to production agriculture were among the major factors that influenced people’s choice and engagement with various social media platforms for agricultural and environmental communication. However, for agricultural topics, the focus of the research was on the content creators and much less on the content users. Agricultural content creators were interested in using social media to share stories about production agriculture to achieve trust and transparency with consumers. Issues of culture were addressed in terms of the information providers’ belief about the impact of social media and not in terms of describing identities or cultural orientation. They also wanted to diversify the audiences they reached with their message (Moore et al., 2015). Most studies in agricultural communication focused on

describing participants in terms of their position in society or connection to agriculture, often for marketing purposes or reputation preservation in the case of production agriculture (White et al., 2014). A discussion of people's cultural identities related to social media was almost non-existent for agricultural communications research. Agricultural communication literature does address culture outside of social media, but as social media radically changes communication patterns, it is imperative to understand how culture impacts engagement with non-agricultural audiences on social media to gain insight into how to disseminate effective agricultural and environmental communication messages.

Environmental communication literature more consistently integrated identity concepts (i.e. demographic variables) into investigations about perceptions of environmental issues, though limited studies holistically investigated cultural identity. Political belief was a demographic variable often used for assessing the impact of cultural identity on perceptions of science information on social media. However, studies on communication in general have indicated differences in social media use among and between people based on geographical locations, type of culture, such as collectivist or individualist, and age (Goodrich & DeMooij, 2014; Kim et al., 2011; Lamm et al., 2019). Due to the different approaches observed between agricultural communication, focused more on marketing, and environmental communication, focused more on demographic variables and perceptions of science, there were generalizable distinctions between the two disciplines in how they research identity and people's perceptions of scientific information. Thus, a gap remains between researching the nexus of science communication, cultural identity, and social media.

Limitations

Limitations for qualitative research include a lack of generalizability. The proliferation of non-scientific based information on social media demonstrated the greatest reach among older generations (Loos & Nijenhuis, 2020). This has implications for understanding identity development in social media. The results of this study included identity formation among younger generations; however, future research should investigate the impact of identity on social media use, or how social media influences the fluid identities of older generations.

Furthermore, the majority of literature reviewed, particularly related to cultural orientation and perceptions of climate science, sustainability, or agriculture, emerged from scholars primarily located in North America (Bedard & Tolmie, 2018; Hamshaw et al., 2018; Hoffman, 2011; Merzdorf et al., 2019; Rohling et al., 2016; Rotz, 2017), the United Kingdom (Rutsaert et al., 2013), or Australia (Rodack, 2019; Small & Warn, 2019). Other research on culture, identity, and social media engagement emerged from either Western (Bennett, 2012; Fujita et al., 2019; Thomas et al., 2017; van Eldik et al., 2019) or East Asian (Koivula et al., 2019; Krezbauer et al., 2014; Pan et al., 2017; Song et al., 2016; Xiao et al., 2012) research perspectives and participants. Some scholars disseminated work from Pakistan (Sajjad et al., 2018), Brazil (de Oliveira et al., 2016), and India (Singh, 2010). Others maintained a global perspective (Chan-Olmsted & Wolter, 2018; Khan et al., 2016). However, no research emerged from the African continent. Therefore, there is a need to conduct future research in this region to determine the effects and influences of cultural identity on social media engagement, specifically within a science communication content. As qualitative research cannot be generalized, integrating future quantitative studies to build a model would further elucidate the connections between concepts discovered through the literature review.

Conclusions and Further Research

The results of the study indicated that individuals assume different identities depending on their motivations for using a specific social media platform. Cultural identity was observed as having an influence on an individual's motivation for using social media as well as their engagement with and on various social media platforms. Furthermore, an individual identity, beliefs, and values, such as political affiliation and occupation, were found to inform social media engagement making it difficult to detach the impact of an individual's cultural and political identity when assessing science communication messages (Kahan, 2010). Therefore, gaining a perspective on the cultural identity of a specific target audience may be an effective way of communicating about politicized science.

Agricultural and environmental communicators must be aware of the impact of cultural identity when selecting online communication channels or social media platforms for message dissemination, as well as message acceptance. Traditional fact-centered messaging strategies for communicating scientific information may not be the most effective strategy (Badullovich et al., 2020). The findings from this study imply it is more important than ever to have the right message delivered on the right channel to a specific audience based on identity (including political affiliation).

While socio-political context has been shown to impact public engagement with environmental communication messages in the past (Badullovich et al., 2020), the current study enhances the literature by investigating what scholars know about the nexus of science communication, cultural identity, and social media within the agricultural and environmental context. The findings demonstrated a need for a targeted research agenda investigating the concept of culture and its impact on communication within social media.

Perhaps the nexus of SRT (Moscovici, 1988) and social media becomes relevant in this space as social media offers an environment in which messages are redistributed (through sharing, retweeting, etc.) between members of an online social group. According to Jaspal et al. (2014), bridging SRT with identity theories and concepts may allow researchers to predict behavioral responses to environmental issues. Identifying the SRs invoked by social media users can assist in message strategies, allowing communicators to avoid content associated with negative SRs and enhance content related to positive SRs for each cultural group targeted. While identifying specific SRs was beyond the scope of this literature review, the lens of SRT shed insight on the cultural orientations of agricultural communicators that differ from those within a non-agricultural audience, limiting message uptake. Additionally, SRT provided a framework for understanding how social interactions online occur within social groups similar to those occurring in the offline world.

Conducting thorough literature reviews, similar to the systematic review used in this study, should be conducted across national and international journals to add to the current overview of the literature in this area. While the current study analyzed specific journals within the agricultural communication discipline compared with broader scholarship mined through the Web of Science and Google Scholar databases, conducting a literature review in other journals will enhance the discussion and evidence surrounding the topic of social media and cultural identity within science communication holistically. The targeted research agenda could be used to create a conceptual framework that assists with social media communication messages about agriculture and the environment. Other factors that should be explored in future research, viewed through the nuanced lens of cultural identity, are trust (affective and cognitive), cognition, demographic variables, and internet use (including access and generational attributes).

Additional implications include the need to move away from a traditional scientific information dissemination model to a model that more fully incorporates knowledge and understanding of the influence of cultural identity. Future studies could expand this research using Social Judgement Theory (Sherif & Sherif, 1967) and assess the relationships between cultural identity and various social groups with the latitudes of acceptance and rejection. This could lend insight into the types of science communication channels and social media platforms that could increase agricultural or environmental message uptake.

Agricultural and environmental communication practitioners have an opportunity to use the findings from this study to situate their work within a cultural context. The field of agriculture itself is rich in culture, traditions, values, and beliefs. Recognizing the cultures within which agricultural and environmental communicators exist is critical for bridging the gap between agricultural communications and non-agricultural or non-traditional agricultural audiences.

Finally, the findings should be used to bolster audience segmentation strategies, using a more complex and holistic view of culture and identity beyond just demographic segmentation. While doing this will require further research in how to identify and conceptualize cultural and identity segments, social media groups (such as those on Facebook) provide a starting point for this conceptualization. Though social media spaces are constantly changing, agricultural and environmental communication researchers have a distinct opportunity to remain nimble and creative in their testing of new approaches and information dissemination.

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